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Evaluating the Efficacy of Telestroke Intervention in a Large Community Hospital Network

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Disclosures: None

Introduction

Literature Review:

Telemedicine for Acute Ischemic Stroke (Telestroke) allows live consultations with remote specialists[1]

IV-tPA for AIS has significant benefits, but only when administered within 3-4.5 hours of onset[2-4]

In previous studies, telestroke has been shown to be safe and to improve rates of thrombolysis in smaller patient populations[4,5]

TIME IS BRAIN

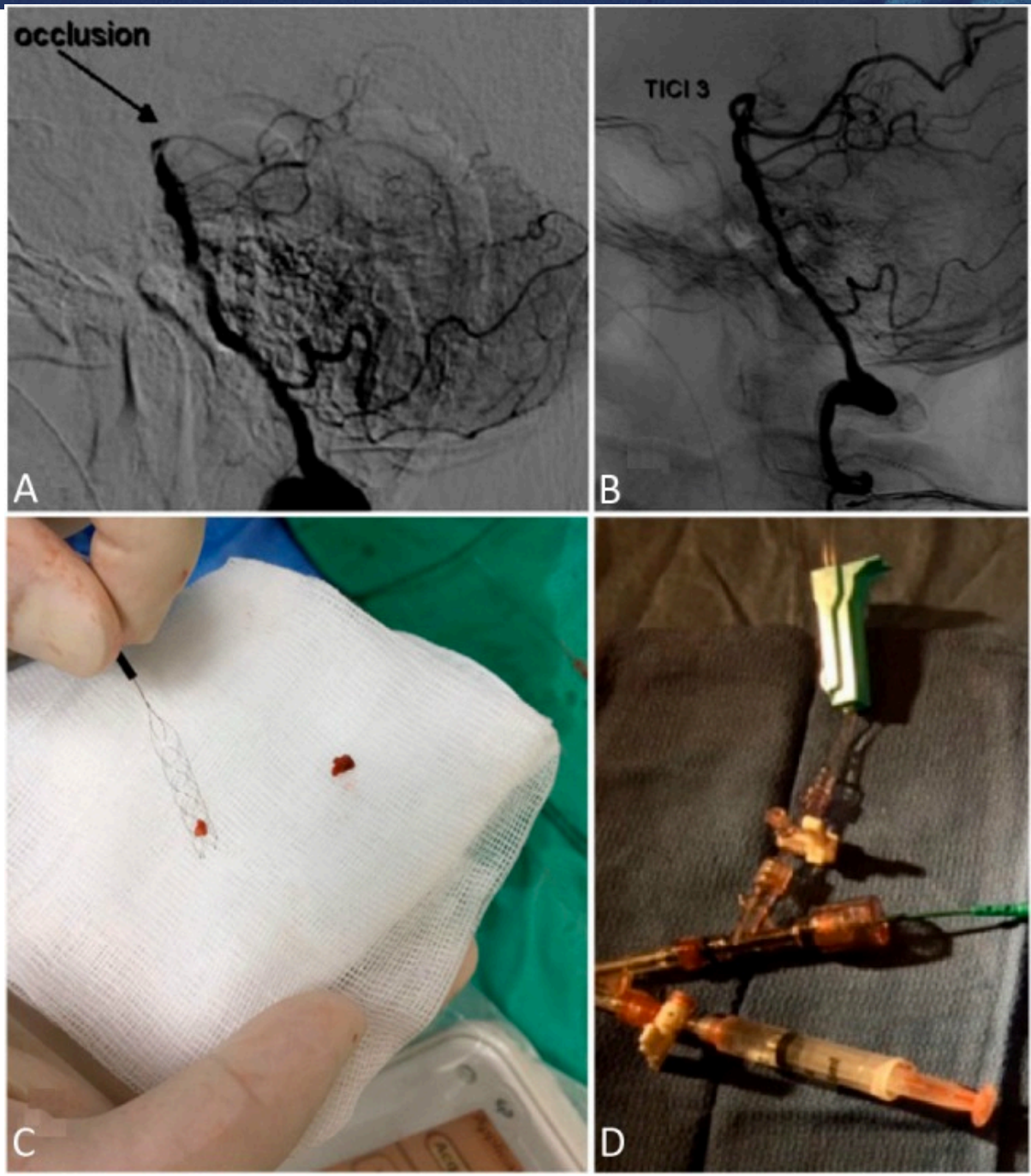
Importance:

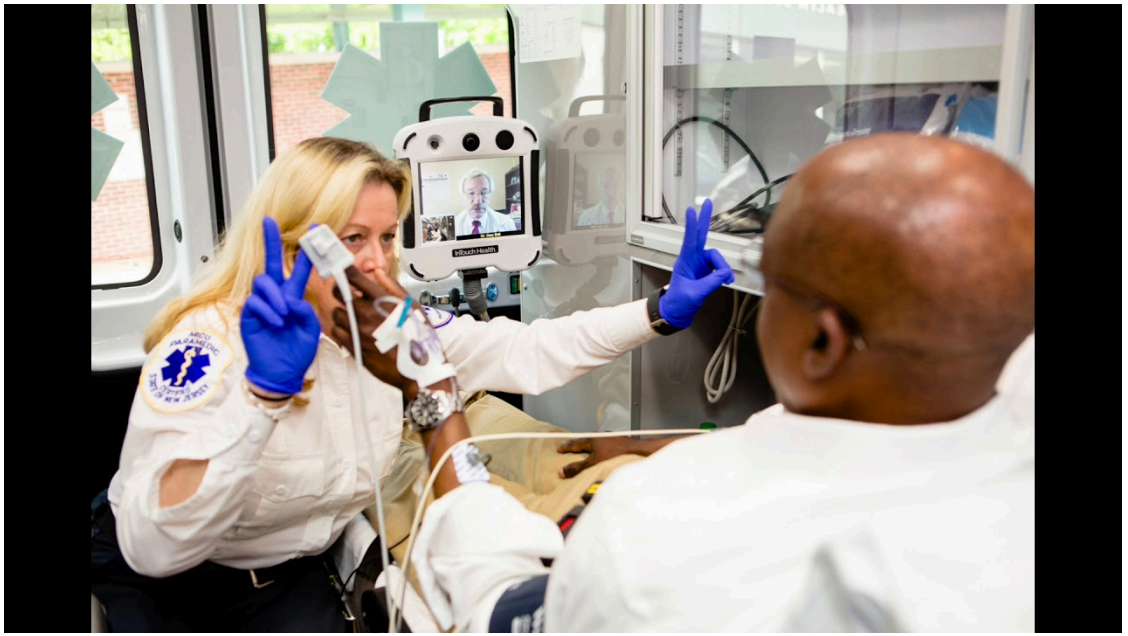
Acute Ischemic Stroke Accounts for 87% of acute strokes and represents a significant *global* burden diminishing QOL[6,7]

Only 3.4-5.2% of AIS patients in the US receive thrombolytic therapy due to difficulties in rapid recognition and delivery[8]

The efficacy of telestroke intervention with regards to patient outcomes is not well described in larger studies

Mechanical Thrombectomy[9]





Objectives & Hypothesis

Research Question

How does telestroke intervention compare to previous standard of care with regards to IV-tPA administration and patient outcomes for AIS patients in a large, multicenter network of community hospitals?

Hypothesis

Access to telestroke care across the Thomas Jefferson University Hospital Network will result in increased thrombolytic perfusion rates and and improved outcomes for acute ischemic stroke patients.

Approach

Design: Retrospective cohort study

Population: 9,702 patients evaluated for acute ischemic stroke at 36 Thomas Jefferson Hospitals from 2014-2019

Intervention: Implementation of Telestroke robot system across Thomas Jefferson Hospital Network

Data Source: TJUH Telestroke database, medical records, literature (control)

Rationale: Utilizes existing data – RCT not ethical since IV-tPA administration benefits are well documented

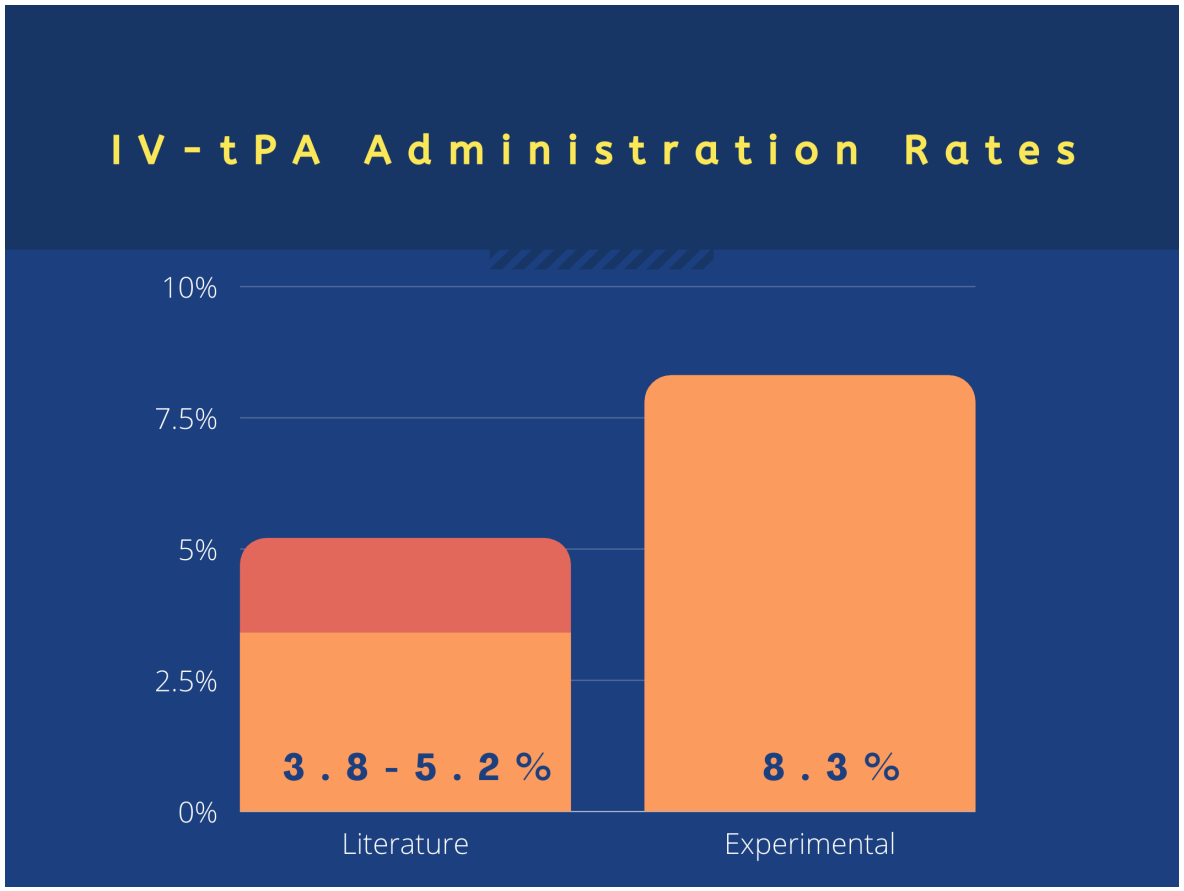
Data Collection (Completed)

Demographics – Sex, ethnicity, age, hospital, department, vessel

Thrombolysis – Administration (Y/N), indications, contraindications, time of onset to consult, time of onset to administration

Patient Outcomes – NIHSS Stroke scale, mortality, MT performance & complications, discharge destination

Results - Outcomes



Preliminary Data Analysis

- Large sample size + COVID Issues have delayed complete data analysis

IV-tPA Administration Rate

- 3.8-5.2% in literature vs. 8.3% in the experiment group
- Expected to increase

NIHSS Stroke Scale Outcome

- IV-tPA administration associated with a significant improvement in NIHSS stroke scale ($p<0.0001$; 95% confidence interval [CI] = 4.27, 7.80)

Conclusions

- Telestroke is a new, affordable, rapidly expanding technology that has not yet been tested on a broad scale
  - Coronavirus has highlighted the importance of remote care
- Telestroke intervention for AIS is feasible, effective, and safe in a large hospital network
  - Rates of IV-tPA administration are increased when compared to current rates in literature
  - Significant improvements in NIHSS Stroke scale associated with IV-tPA
- Impact: Data supports the implementation of telestroke systems on a similarly large scale
  - Improved accessibility to stroke care, particularly in underserved areas

Future Directions

Prospective study design

- Study limited by retrospective and literature controls
- May be possible at new site testing or implementing telestroke

Expansion of mobile stroke unit + telestroke intervention

- Ambulance that is equipped for stroke care
- Quicker access to stroke care
- Allows areas without any stroke center to receive care

Acknowledgements

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